

REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1 and 5-23 are pending. Claims 1, 7, 14 and 19 have been amended and new claim 23 has been added to clarify the claimed subject matter.

The amendments are supported by the original disclosure and, thus, no new matter has been added. For example, page 11-14 of the specification inter alia describe highly stringent conditions for hybridization and washing, and percent identity between amino acid sequences. Such conditions and identity are recited in the claims. The subject matter of original claim 14 has been divided into amended claim 14 and new claim 23.

35 U.S.C. 112 – Enablement

The Patent Office has the initial burden to question the enablement provided for the claimed invention. M.P.E.P. § 2164.04, and the cases cited therein. It is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. *In re Marzocchi*, 169 USPQ 367, 370 (C.C.P.A. 1971). Specific technical reasons are always required. See M.P.E.P. § 2164.04.

Claims 1, 5-17 and 19-22 were rejected under Section 112, first paragraph, because it was alleged that the specification "while being enabling for the *Arabidopsis* AtNCED3 DNA comprising the nucleotide sequence of SEQ ID NO:5 encoding an amino acid sequence of SEQ ID NO:6, and a method for increasing or decreasing drought stress tolerance in *Arabidopsis* by transforming *Arabidopsis* plants with the *Arabidopsis* AtNCED3 DNA comprising the nucleotide sequence of SEQ ID NO:5 encoding an amino acid sequence of SEQ ID NO:6, does not reasonably provide enablement for other DNA molecules, or for methods of increasing or decreasing other types of stress tolerance in other species of plants." Applicants traverse.

The Examiner's concerns seem to center on the following issues:

- (a) one of skill in the art would allegedly not be able to determine how to use the claimed sequences to achieve tolerance to a stress other than drought without undue experimentation,
- (b) one of skill in the art would allegedly not be able to determine which modifications could be made to the claimed sequences and still retain function (e.g., neoxanthin cleavage activity) without undue experimentation, and
- (c) the specification allegedly fails to describe how a single vector could be used to achieve both increased and decreased stress tolerance.

With regard to issue (a), Applicants believe the rejection is in error, particularly in regard to the DNA claims (claim 1 et seq.) and transgenic plant claims (claim 7 et seq.) Section 112, first paragraph, does not require a specification to enable all potential uses of a claimed product; rather, a single disclosed or well-established use commensurate in scope with the claims is all that is required. Accordingly, disclosure of the claimed DNA for use in increasing a plant's drought stress should be sufficient to enable claims 1-13 and 15-18. Such product claims are clearly enabled.

With regard to method claims 14 and 19-22, Applicants clearly demonstrate that expression of a neoxanthin cleavage enzyme gene is induced by stresses other than drought (e.g., high salt concentrations and cold conditions). From these findings, Applicants concluded that neoxanthin cleavage enzyme genes may be used to increase a plant's tolerance of stress in general. It appears that the Examiner is questioning this conclusion, noting that "a correlation between stress conditions and the induction of gene expression does not always indicate that the product of the induced gene is involved in affecting stress tolerance."

Consideration of the attached scientific papers of Kasuga et al. and Liu et al. would be helpful. These papers feature transcription factors (DREB) whose expression is induced by drought, salt, and low-temperature stresses. They show that tolerance for each of the stresses can be provided by overexpressing these genes. Based on such knowledge, which was known in the art at the time this application was filed, a skilled artisan would readily recognize the use of the claimed invention for stresses other than drought as well.

Applicants note that claim 20 limits the claimed stress to "drought stress" and, therefore, should not be rejected for this reason.

With regard to issue (b), Applicants believe the rejection as applied to the claims before amendment is in error. The enablement decision tree set forth in the Enablement Training Materials asks the following questions:

1. Does the specification teach how to make and use at least one embodiment encompassed by the claims as a whole, without undue experimentation? Since the specification discloses at least one working example, the answer to this question is necessarily "Yes".

2. Are the enabled embodiments [those discussed above] representative of the full scope of the claim? Since the Examiner has withdrawn the written description requirement, she presumably has deemed the disclosed species to be representative of the genus of variants claimed. In any event, a person skilled in the art would not expect substantial variation within the genus defined by the claims because the stringent hybridization conditions and the high degree of homology yield structurally similar polypeptides. The genus is further limited in that the resulting polypeptides are required to retain a specific function (e.g., neoxanthin cleavage activity), a feature which is readily assayable using routine experimentation. As Applicants disclose a sufficient number of representative species, the answer to this question is also necessarily "Yes".

Accordingly, the Patent Office's own decision tree in these guidelines directs that no enablement rejection should be made.

With regard to issue (c), this portion of the rejection is mooted by the amendment of claim 14 and the addition of new claim 23. Applicants intend claim 23 to encompass inter alia introduction of an antisense oligonucleotide to decrease stress resistance in a plant (see pages 17-18 of the specification).

Withdrawal of the enablement rejection made under Section 112, first paragraph, is requested because it would not require undue experimentation for a person of skill in the art to make and use the claimed invention.

35 U.S.C. 112 – Definiteness

Claims 1, 5-13 and 15-19 were rejected under Section 112, second paragraph, as being allegedly "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." Applicants traverse.

The Examiner objects to the use of the term "gene". Although the meaning of the term is sufficiently clear, Applicants have amended the claims as suggested by the Examiner (i.e., replace the term "gene" with the term --polynucleotide--) to advance prosecution in this application.

Applicants request withdrawal of the Section 112, second paragraph, rejection because the pending claims are clear and definite.

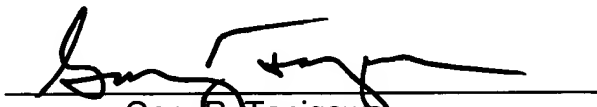
Conclusion

Having fully responded to all of the pending objections and rejections contained in the Office Action (Paper No. 21), Applicants submit that the claims are in condition for allowance and earnestly solicit an early Notice to that effect. The Examiner is invited to contact the undersigned if any further information is required.

Respectfully submitted,

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